IN THE CLAIMS:

Cancel claims 1-20 and insert new claims 21-41.

21. (New) A method of operating an internal combustion engine with homogeneous fuel combustion, wherein a condition variable in a cylinder is determined as a function of a crank angle and a signal about a cylinder condition is obtained therefrom, wherein at least two characteristic cycle values from a group comprising mass fraction of injected fuel burned, maximum pressure increase in the cylinder, combustion noise, start of combustion or duration of combustion are determined from the cylinder condition signal, the determined characteristic cycle values are compared with desired values for the characteristic cycle values entered in a characteristic diagram and a given difference between the two values is computed and the difference is supplied to a regulation algorithm and a time of fuel ignition of at least one injection event or an inert gas fraction in the cylinder is adjusted as a correcting variable in order to stabilize combustion and to minimize noise and exhaust emission.

22. (New) The method according to claim 21, wherein the condition variable is selected from a group comprising pressure, temperature, ion flow or output signal of an optical principle of measurement.

23. (New) The method according to claim 21, wherein the characteristic cycle values are determined either from an output signal of a sensor making use of an acoustic, optical, electrical, thermodynamic or

mechanical principle of measurement, through a mathematical model or by combining a sensor-based and a model-based approach.

24. (New) The method according to claim 21, wherein a 50% mass fraction of an injected fuel burned and a maximum in-cylinder pressure increase are determined as the characteristic cycle values.

25. (New) The method according to claim 21, wherein supply and variation of an inert gas mass within the cylinder is carried out through external exhaust gas recirculation or through in-cylinder exhaust gas recirculation or by combining internal and external exhaust gas recirculation.

26. (New) The method according to claim 21, wherein control variables fuel injection timing of at least one injection event and inert gas fraction within the cylinder are adjusted simultaneously by means of the regulation algorithm.

27. (New) The method according to claim 21, wherein a precontrol value that is dependent on an operating condition of the engine and has been entered in a respective characteristic diagram is added to a respective one of the values calculated for the control variables through the regulation algorithm.

28. (New) A method of operating an internal combustion engine which is switched at least between a first and a second mode of operation as a function of at least one characteristic engine operation parameter, involving the following steps:

- selecting at least one characteristic engine operation parameter,

- associating value ranges with each engine operation parameter, at least one first value range being associated with the first mode of operation and at least one second value range being associated with the second mode of operation,

- comparing actual values of the selected characteristic engine operation parameters with the value ranges,

- switching to the second mode of operation or remaining in the second mode of operation when all the selected characteristic engine operation parameters lie within the second value range.

29. (New) The method according to claim 28, wherein the engine is switched to the first mode of operation or remains in the first mode of operation when at least one actual value of a selected characteristic engine operation parameter lies within the first value range.

30. (New) The method according to claim 28, wherein at least one threshold value for switching between the modes of operation is associated with each selected characteristic engine operation parameter, the first and the second range of values being separated by said threshold value.

31. (New) The method according to claim 28, wherein at least one characteristic engine operation parameter is selected from a group comprising engine speed, engine load, engine coolant temperature, atmospheric pressure, temperature of an exhaust gas after-treatment

system, exhaust gas temperature upstream of an exhaust gas after-treatment system, exhaust gas temperature downstream of the exhaust gas after-treatment system, speed of an engine speed change, speed of the engine load change and actual transmission ratio of a driving train.

32. (New) The method according to claim 28, wherein the internal combustion engine is operated in the first mode of operation with conventional diesel combustion and in the second mode of operation with alternative diesel combustion.

33. (New) The method according to claim 28, wherein a predetermined fixed value is selected for at least one threshold value.

34. (New) The method according to claim 28, wherein at least one threshold value of at least one selected characteristic engine operation parameter is determined as a function of at least one other engine operation parameter.

35. (New) The method according to claim 28, wherein at least one threshold value has a hysteresis.

36. (New) A method of operating an internal combustion engine which is switched at least between a first and a second mode of operation as a function of at least one characteristic engine operation parameter, wherein switching occurs as a function of a measured and/or calculated temperature before and/or after the exhaust after-treatment system.

37. (New) A method of operating an internal combustion engine comprising the following steps:

- determining a desired value for injection timing and/or a combustion situation,

- determining a desired value for a ratio fresh air mass to inert gas mass inside a cylinder and/or for an air/fuel ratio in an exhaust,

- measuring or computing an actual value for a ratio fresh air mass to inert gas mass inside the cylinder and/or for the air/fuel ratio in the exhaust,

- calculating a difference between the desired value and the actual value of the ratio fresh air mass to inert gas mass inside the cylinder or of the air/fuel ratio in the exhaust,

- correcting a desired value of injection timing or the combustion situation as a result of the difference between the desired value and the actual value of the ratio fresh air mass to inert gas mass in the cylinder or of the air/fuel ratio in the exhaust.

38. (New) The method according to claim 37, wherein the desired value for injection timing and/or for the combustion situation is corrected by being advanced if the actual value for the ratio fresh air mass to inert gas mass inside the cylinder and/or the air/fuel ratio in the exhaust is smaller than the desired value for the ratio fresh air mass to inert gas mass or the air/fuel ratio in the exhaust.

39. (New) The method according to claim 37, wherein the desired value for injection timing and/or for the combustion situation is corrected by being retarded if the actual value for the ratio fresh air mass to inert gas mass inside the cylinder and/or the air/fuel ratio in the

exhaust is greater than the desired value for the ratio fresh air mass to inert gas mass or the air/fuel ratio in the exhaust.

40. The method according to claim 37, wherein the desired value for injection timing is determined by simple control – without feedback on the actual combustion situation.

41. The method according to claim 37, wherein injection timing is determined by regulation from the difference between the desired value of the combustion situation and the actual value of the combustion situation – using a combustion regulator with feedback on the actual combustion situation.